AGENDA

- Ft. Bragg Energy Bill
- Bragg vs. Army Energy Bill
- Where is the Energy used?
- What are we doing?
- Energy Saving Tips
- Future Vision

BLUF

- Saving Energy provides more funds for the installation, soldiers and the Army

- Every little action helps saves energy and money.

Army vs. Ft. Bragg Energy Usage

	Army (FY 05)	Ft. Bragg (FY 05)	Army vs. Ft. Bragg (%)
Annual Utility Bill ($ in Millions)	**$1,000**	**$40**	**4%**
ASCIM's Energy Bill ($ in Millions)	**$ 521**	**$40**	**7.6%**
Consumed TBtu (Trillion British Thermal Units)	**78.1**	**3.4**	**4.4%**
Number of Buildings	**158,690**	**5,272**	**3.3%**
Million Square Feet	**843**	**30.2**	**3.6%**

- Ft. Bragg was approximately 4% of the total Army Energy Bill

Historical & Projected Energy Use

Current and Projected Consumption and Costs				
	Power Cost	KWh Consumed	Fuel Cost	Fuel Consumed
FY 1997	$23,778,036	438,340,828	$7,619,382	1,666,823
FY 1998	$24,956,335	476,981,425	$8,220,906	1,647,718
FY 1999	$24,750,153	490,503,048	$5,951,363	1,497,173
FY 2000	$22,716,358	496,206,161	$5,633,156	1,400,196
FY 2001	$22,864,574	529,185,789	$10,292,337	1,439,297
FY 2002	$23,314,405	519,369,320	$6,027,701	1,208,192
FY 2003	$24,086,157	528,474,190	$8,490,921	1,434,586
FY 2004	$25,687,080	539,470,144	$10,022,401	1,480,466
FY2005	$28,149,514	551,127,636	$12,918,951	1,597,610
FY 2006	$38,496,170	654,696,777	$12,163,108	1,796,681
FY 2007	$42,499,772	722,785,241	$13,428,071	1,983,536
FY 2008	$45,315,492	785,636,132	$14,595,730	2,156,018
FY 2009	$49,847,041	864,199,745	$16,055,303	2,371,619
FY 2010	$51,357,558	890,387,616	$16,541,827	2,443,487

- **Ft. Bragg's Total Energy Bill for FY 05 was $40.2 mill**
- **The forecast for FY06 Energy Bill is $50.7 million**

Reimbursable Customers

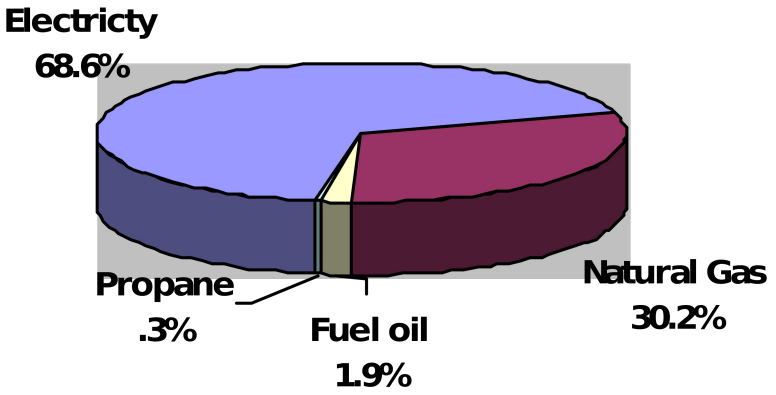
- Total Energy Bill for FY 05 was approximately $40.2 million
- Reimbursable Customers paid $14.3 for Energy Bills in FY 05 back to the SRM.
- Family Housing is the largest customer. Their energy bill was $6.9 million
- Pope AFB is the second largest customer. Their energy bill was $4.4 million

Government Reimbursable Customers at Fort Bragg

	Electric Meters	Gas Meters	LPG Meters	Oil Meters	Water Meters	Total Meters
Government Reimbursable Customer (54 customers)	195	55	12	14	3	**279**
Non-Government Reimbursable Customer (37 customers)	142	7	0	0	31	**180**
Totals	337	62	12	14	34	**459**

Energy Consumption and Cost (FY05)

Utility	Consumption MMBtu	Cost $K
Electricity	1,771	$27,214
Natural Gas	1,564	$12,146
Propane	12	$139
Fuel Oil	111	$793
Total	**3,458**	**$40,292**

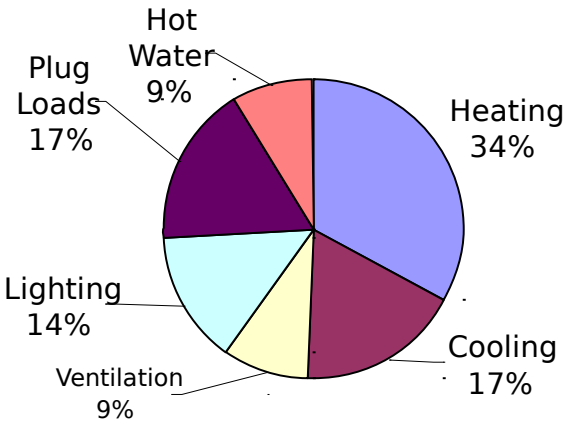


- Ft. Bragg Energy Bill is 26% of DPW entire budget. This does not include ESPC or Utility Privatization
- Ft. Bragg's Energy Bill for FY 05 was $40.2 million
- DPW's FY 05 budget was $155.2 million (SRM was $65.9 million)

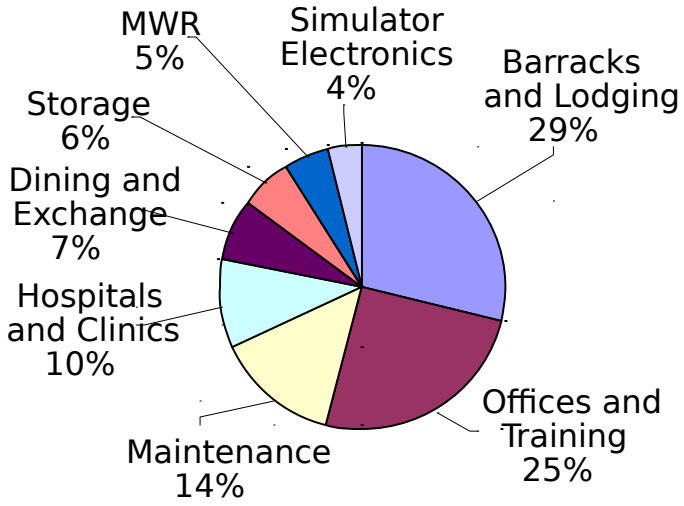
Ft. Bragg Load Profiles

Where did all the Energy go?

Fort Bragg Energy Use by End-Use



Fort Bragg Energy Use by Building Type

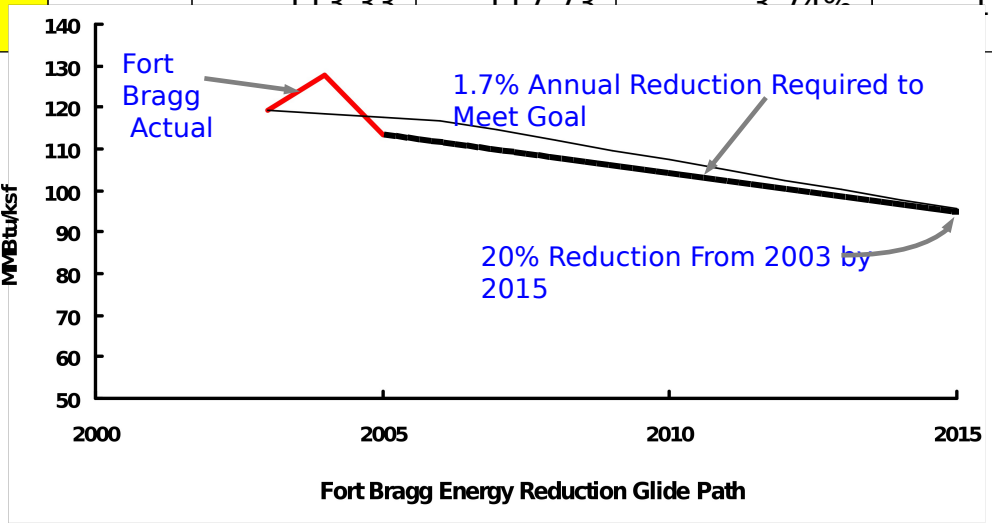


- 51% of Energy Use is for Heating and Cooling
- In FY05, energy for heating and cooling cost approximately $20.5 million
- Heating and Cooling not running as efficiently as possible

Ft. Bragg Reduction Glide Path

- EPAct 05 requires 20% reduction of energy consumption by 2015 (2% per year 2006-2015) using 2003 as base year

Year	MBTU	KSF	MBTU/KSF	Glide Path	Performance vs Goal	Change vs Previous Yr.	Glide Path %
2003	2,575,759	21,590	119.30	119.30	0.00%		100.00
2004	2,773,768	21,717	127.72	118.52	7.77%	7.06%	
2005	2,611,02	23,03	113.33	117.73	3.74%	11.27%	



What Are We Doing?

- Identifying the Real Problems
- Developing Action Plans to Fix Problems
- Searching For Other People's Money to Fix Problems

  - ASCIM, IMA, CERL, PNNL, NC Universities

- Planning Intense Energy Awareness Campaign in October
- Changing the Cultural of Energy Usage

Energy Awareness

DRAGON PULSE
AIRBORNE
What do you do to conserve on high energy cost?
"I don't do anything to cut down on energy costs. I don't really think about it because I live in the barracks."
— Pvt. Kevin Collin
Company A,
37th Engineer Battalion

Energy Saving Tips

- Turn Off Light When You Leave a Room
- Turn Down the Thermostat in the Winter
- Turn Up the Thermostat in the Summer
- Turn Off Your Monitor When Not In Use
- Turn Off Your Speakers When Not In Use
- Unplug Unused Equipment
- Use Task Lighting Instead of Overhead Lighting
- Close Shades and Blinds in the Summer
- Open Shades and Blind in the Winter

Energy Saving Tips

- Install ENERGY STAR Programmable Thermostats
- Switch to ENERGY STAR Light Bulbs
- Change Air Filter Once a Month
- Install ENERGY STAR Ceiling Fans
- Upgrade to ENERGY STAR Appliances
- Shift Laundry and Dishwashing to Off-Peak Hours
- Run Full-Capacity Loads
- Reduce Water Heater Temperature to 120˚F
- Install Dimmers to Control Wattage and Set the Mood

Use the Right Bulbs!

- T8 bulbs use ~40% less energy (about $27 per fixture, per year)
- T8 bulbs use electronic ballasts – quieter, less flickering
- You can visually ID the wrong bulb -- T8 are 1” diameter, T12 are 1 ½” diameter

Small Things Make a Difference…

- Turn off ONE fluorescent light fixture during your lunch hour

If everyone on post does this, the installation will save over $1,300 per day!

(Over a quarter of a million dollars per year!)

Future Vision

- Recommissiong Heating and Cooling Systems
  - Systems running efficiently
- Remote Metering and Monitoring
  - Identify and fix problems before customer aware
- Load Management
  - Switch some energy use to night to lower energy bills
- Building Energy Audits
  - Find and Fix Problem Areas
- Energy Efficient Design in New Construction

A LOT OF MILITARY CONSTRUCTION!!!

21 Years Of MCA Construction

FY 85	$	108,100,000
FY 86	$	65,100,000
FY 87	$	23,700,000
FY 88	$	37,000,000
FY 89	$	36,800,000
FY 90	$	59,600,000
FY 91	$	53,000,000
FY 92	$	65,900,000
FY 93	$	12,700,000
FY 94	$	202,775,000
FY 95	$	135,505,000
FY 96	$	60,035,000
FY 97	$	143,687,000
FY 98	$	58,306,000
FY 99	$	147,340,000
FY 00	$	75,724,000
FY 01	$	159,762,000
FY 02	$	198,135,000
FY 03	$	195,860,000
FY 04	$	148,900,000
FY 05	$	182,700,000
TOTAL	$	2,170,629,000

Growth of 10 Million SF In 21 Years

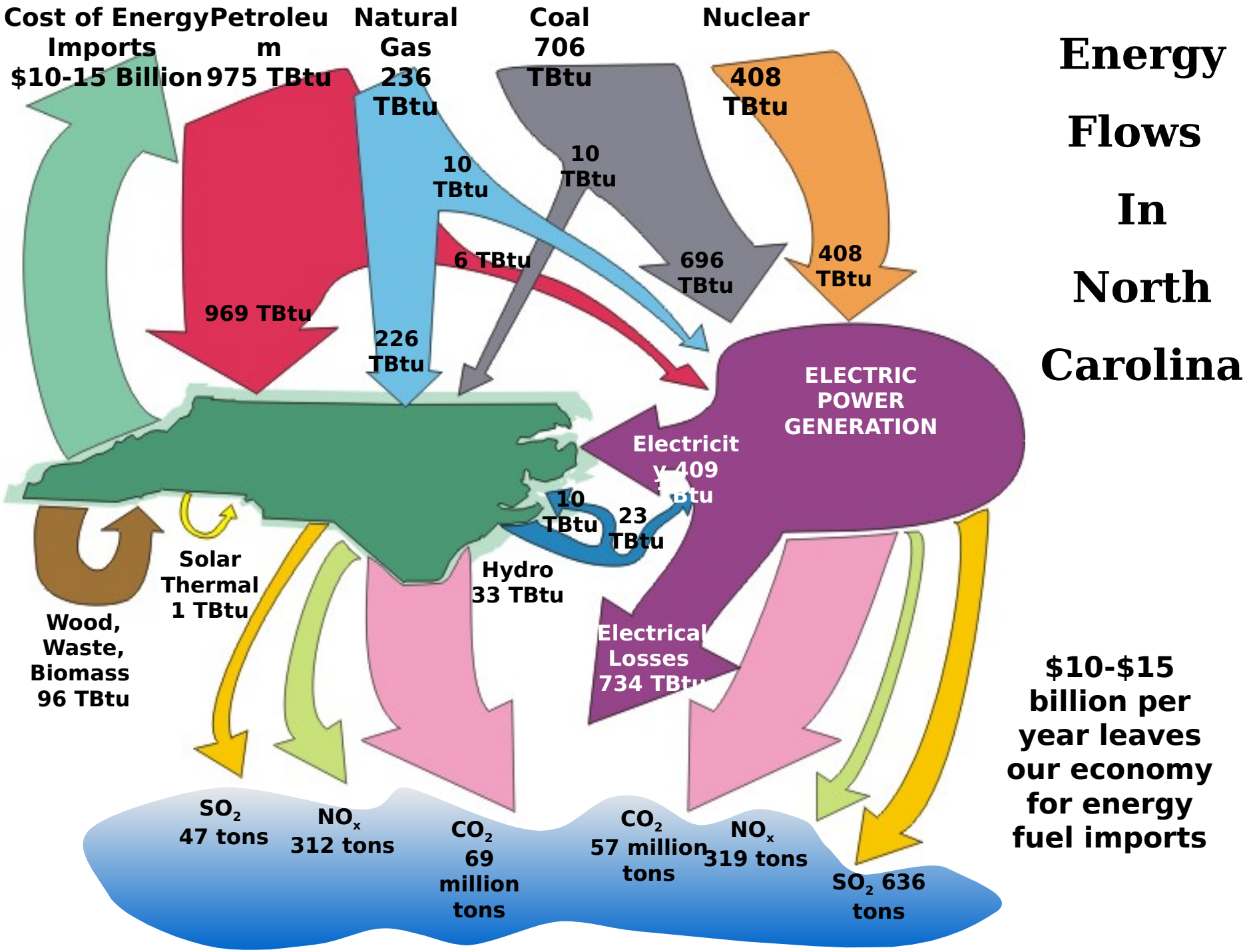
Construction Budget FY06 – FY11
FYDP + BRAC + Modular Force + PMH

FY 06	$ 248,785,000
FY 07	$ 261,123,000
FY 08	$ 480,313,000
FY 09	$ 651,100,000
FY 10	$ 323,580,000
FY 11	$ 146,609,000
PMH	$ 400,000,000

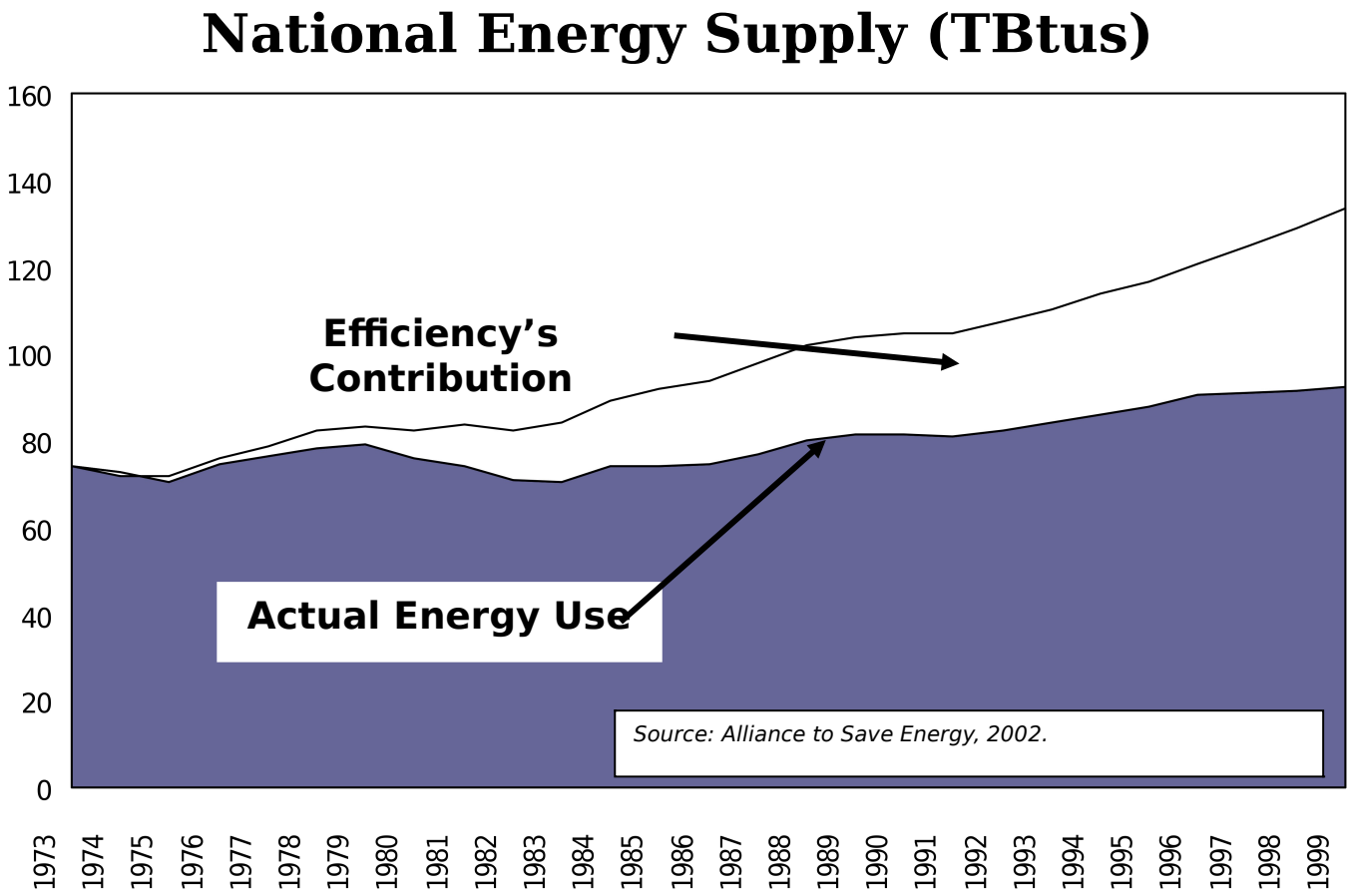
Conclusion

- Ft. Bragg’s Energy Bill for FY 05 was $40.2 million and it is going up.
- Saving Energy provides more funds for the installation, soldiers, and the Army
- Every little action helps saves energy and money.

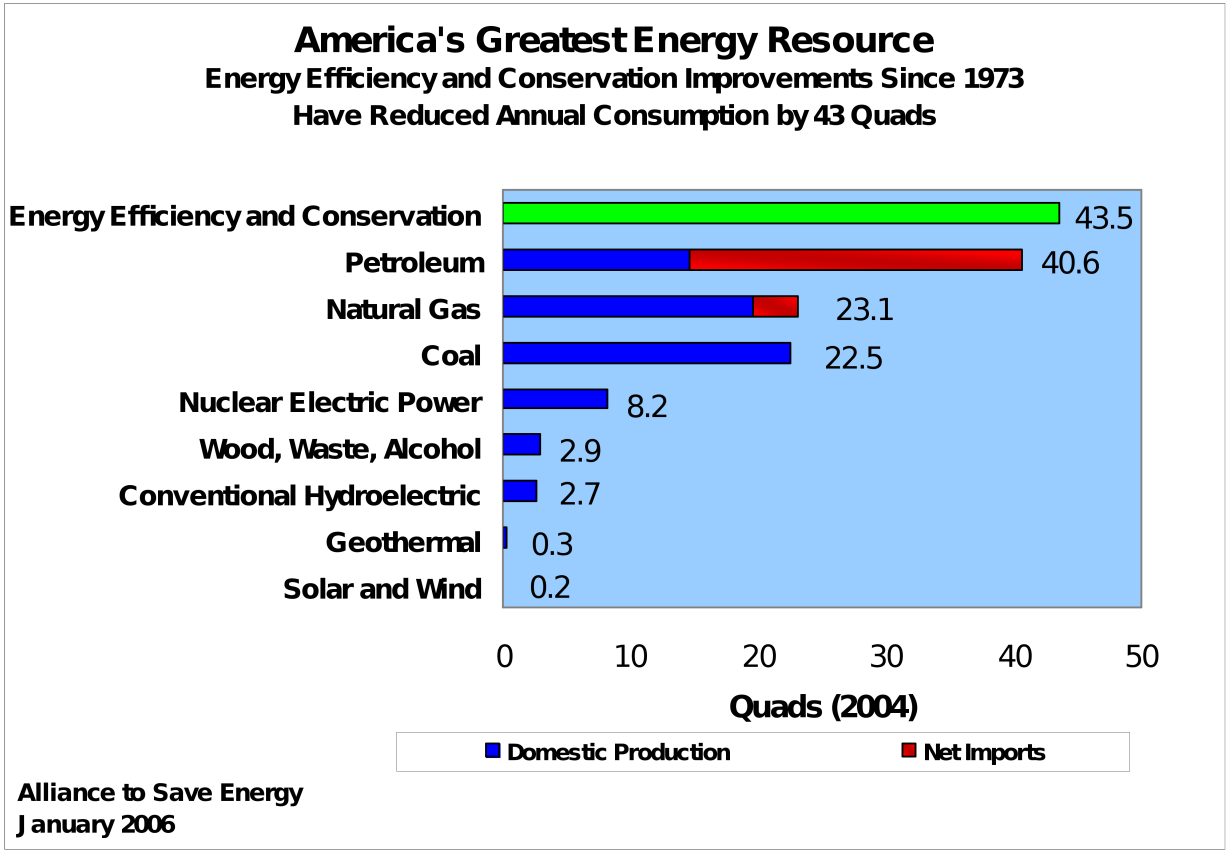
Back-Up Slides


Cost of Energy Imports $10-15 Billion
Petroleum 975 TBtu
Natural Gas 236 TBtu
Coal 706 TBtu
Nuclear 408 TBtu
10 TBtu
10 TBtu
6 TBtu
696 TBtu
408 TBtu
969 TBtu
226 TBtu
ELECTRIC POWER GENERATION
Electricity 409 TBtu
10 TBtu
23 TBtu
Hydro 33 TBtu
Solar Thermal 1 TBtu
Wood, Waste, Biomass 96 TBtu
Electrical Losses 734 TBtu
SO_2 47 tons
NO_x 312 tons
CO_2 69 million tons
CO_2 57 million tons
NO_x 319 tons
SO_2 636 tons
Energy Flows In North Carolina
$10-$15 billion per year leaves our economy for energy fuel imports

Energy efficiency's contribution to our energy supply



America's Greatest Energy Resource



Average Monthly Electricity Bill by Sector and Location, 2000

	Residential		Commercial		Industrial	
	¢ / kWh	Monthly Bill ($)	¢ / kWh	Monthly Bill ($)	¢ / kWh	Monthly Bill ($)
North Carolina	7.97	87	6.36	380	4.58	10,398
South Atlantic	7.70	85	6.29	445	4.16	7,419
United States	8.24	73	7.43	455	4.64	7,813

Source: EIA, Electric Sales and Revenue, 2000, Table 1

South Atlantic states include DE, MD, DC, WV, VA, NC, SC, GA & FL

Energy Team Goals and Objectives

Goal: Transition to reliable and secure renewable energy while reducing overall demand.

- **Objective 1:** Eliminate energy inefficiencies that waste natural and financial resources in existing facilities.
- **Objective 2:** Increase energy efficiency in renovation and new construction
- **Objective 3:** Reduce dependency on fossil fuel and increase use of clean, renewable energy, reduce waste, increase efficiencies, and optimize environmental benefits
- **Objective 4:** Improve security and reliability of energy systems to provide dependable utility services

(Adopted Army Energy Strategy)

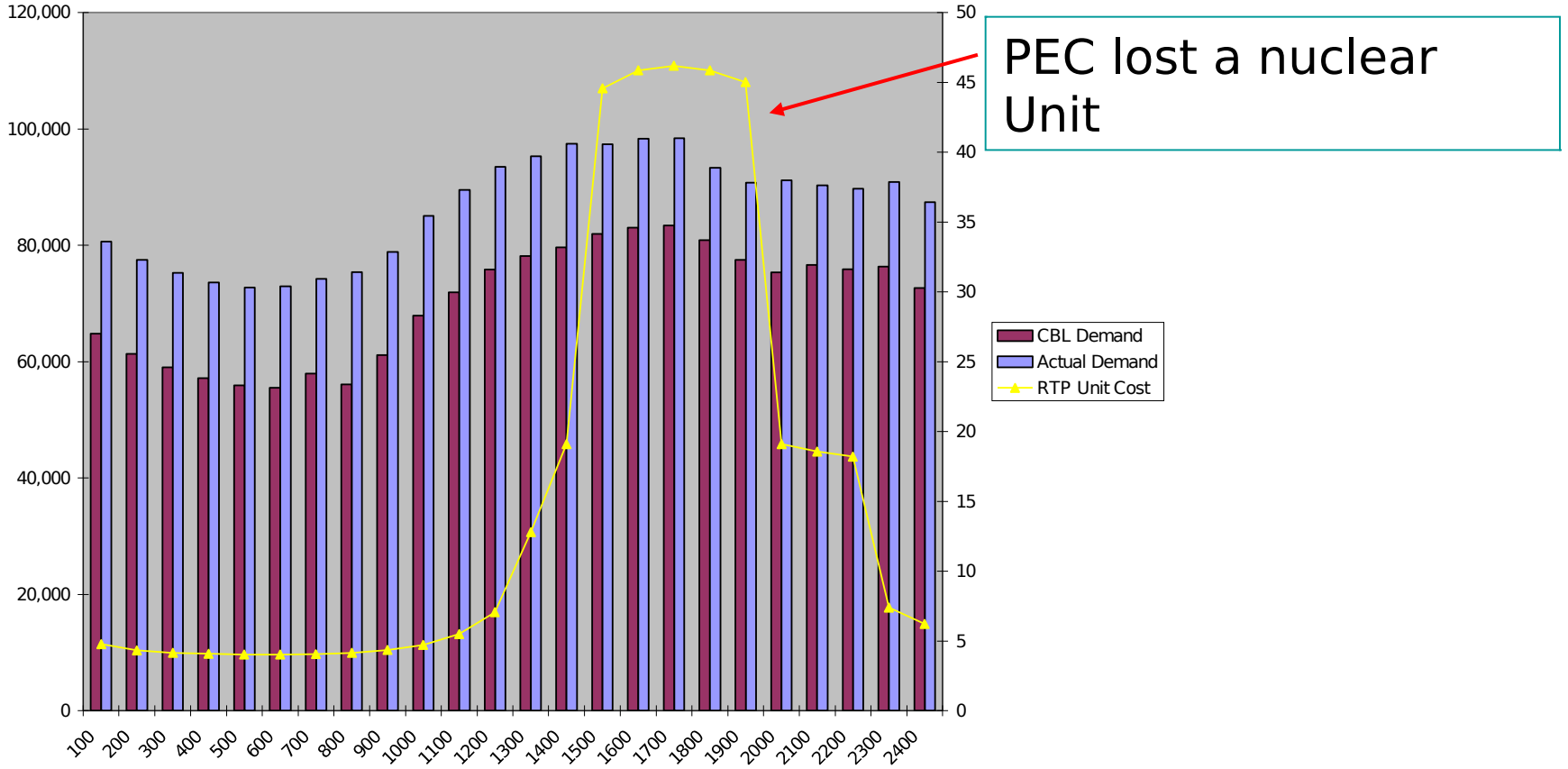
Electrical Bill Breakdown

- Electricity provided by Progress Energy- Carolinas (PEC) formerly Carolina Power and Light (CP&L)
- Electrical Rate is Real-Time Pricing- Time of Use (RTP-TOU)
  - The Customer Base Load (CBL) is the portion we pay regardless of usage based upon average historical usage
    - Power cost below the CBL is $.0454/kWh
    - For one year we will pay approximately $25 million
  - The RTP is the portion we pay when we go above the CBL (peaks) and the cost changes hourly – historically up to $.50/kWh
    - In FY 05 we paid an additional $3.8 million for going over the CBL
    - In FY 04 we paid an additional $2.9 million for going over the CBL

Electrical Bill Breakdown

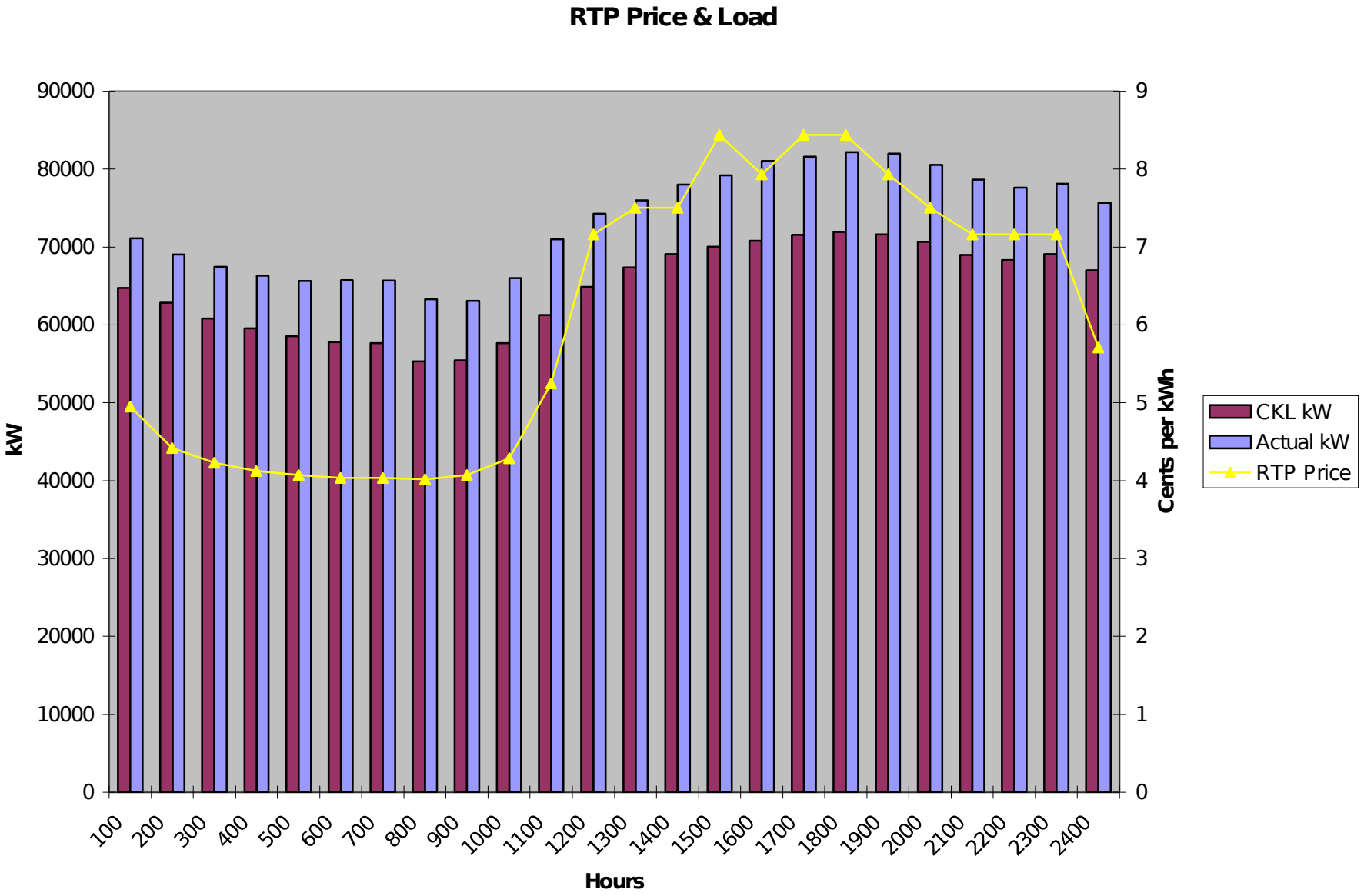
- Load Managing the Peaks
  - System Peaks typically occur around 17 JUL-15 AUG
  - PEC releases the RTP rates for next day around 4 PM
  - Honeywell monitors rates and determines the sequence of actions
    1. Normal Operation
    2. Load Shifting – Demand Reduction
    3. On-site Generation
    4. System Blackout and Recovery

Daily Profile with High Cost RTP



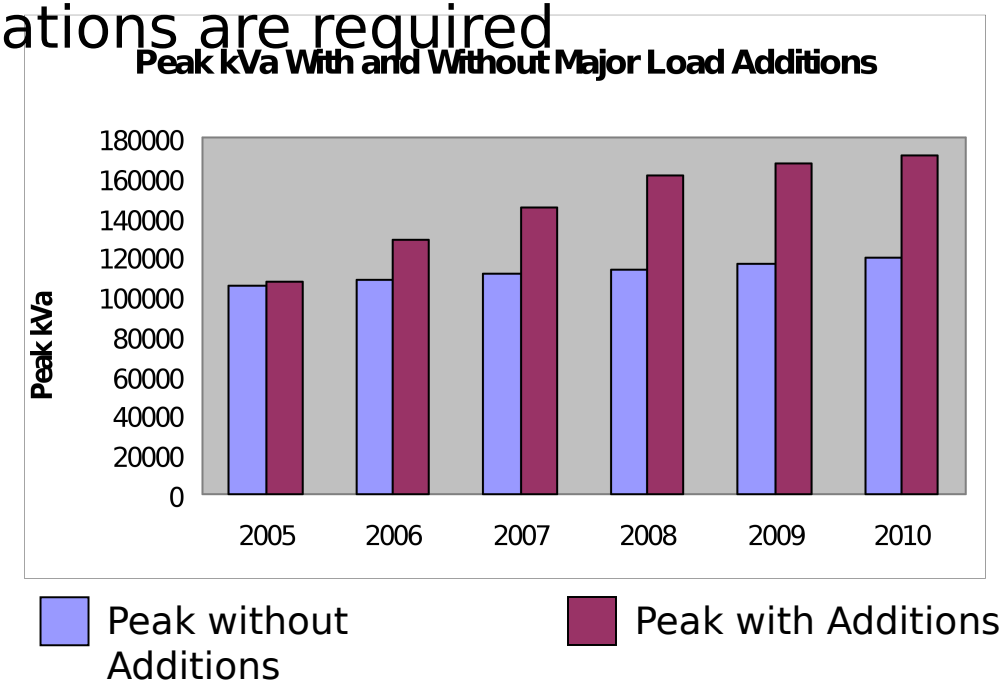
- **RTP is market driven – supply and demand rules**
- **When energy is abundant, price goes down**
- **When energy is scarce, price goes up**

Typical Daily RTP for Summer 2005



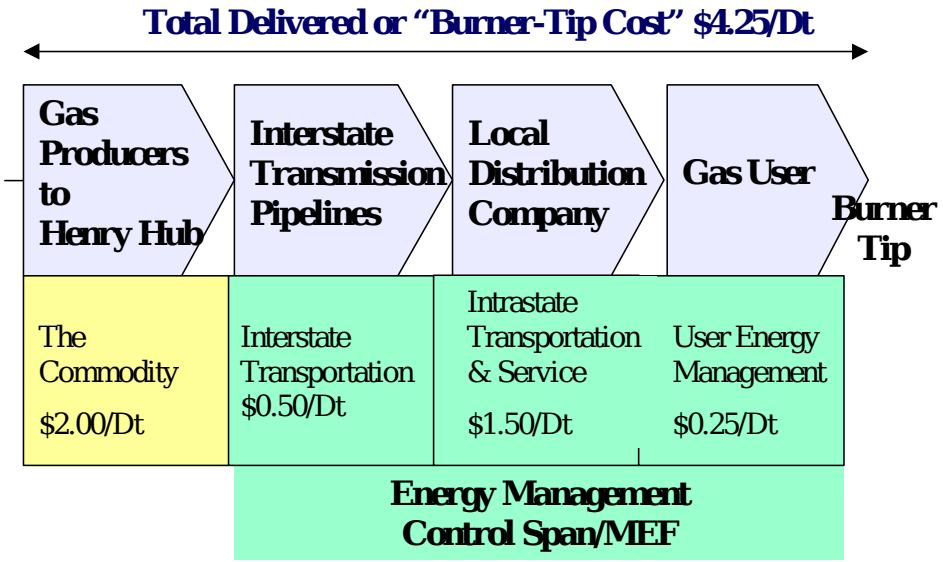
Projected Peak Growth

- The peak load for 2005 was 104 Mva
- Without any new load the peak in 2010 will be 120 MVa
- With the projected new load the peak in 2010 will be 170 MVa
- New substations are required



Natural Gas Rate

- Buy NG on the open market and pays transportation fee to NCNG
- Operate under the T-10 transport gas tariff from NCNG
- The cost of natural gas supply is subject to four cost components
  (1) Commodity (2) Transportation (3) Local Distribution (4) User Management
- Commodity cost represents about 50%. The price is volatile, driven by macro supply and demand forces.



Ft. Bragg Natural Gas

- NG limited to 7,000 dt/day by the pipeline constraints
- Penalty for exceeding $65 per dt.
- 50% of NG locked in on long-term gas futures
- 50% picked up on short term contracts
- NG is provided to the site via a 12-inch main pipeline.
- Three organization operate gas distribution systems-
  1. NCNG- Delivery Point north to Longstreet Rd. and along Reilly St.
  2. DPW- MMD, COSCOM, South Commissary, Reserve Center, Old Post area, and Pope AFB
  3. Honeywell- SAAF, SSC, Ardennes St, Bldgs. on 775th SFG Wy., Smoke Bomb Hill

Summary

- Energy Bill for FY 05 was $40.2 million (26% of DPW budget)
  - Reimbursable Customers paid $14.3 for Energy Bills
  - Electricity was 68.6% costing $27.1 million; NG was 30.2% costing $12.1 million
  - 51% of Energy Use is for Heating and Cooling
- EPAct 05- 20% reduction of energy consumption by 2015
- Electricity
  - Provided by PEC at RTP-LGS rate
  - There are Four Existing and Two Planned Substations
  - The system capacity is 150 MVa in 2005 and 200 Mva by 2008
  - The peak electrical load for 2005 was 104 Mva. With the projected new load, the peak in 2010 is 170 Mva
- Natural Gas
  - Buy NG on the open market, pays transportation fee to NCNG under the T-10 transport gas tariff
  - The cost of natural gas supply is subject to four cost components
    - (1) Commodity (50% of cost) (2) Transportation (3) Local Distribution (4) User Management